REMARKS

Applicant respectfully disagrees with Examiner's decision to make the present Office Action Final. Examiner contends that Applicant's amendment necessitated new grounds of rejection, but Applicant respectfully submits that this conclusion is incorrect.

Applicant draws Examiner's attention to MPEP 706.07(a), where it is stated that "A second or any subsequent action on the merits in any application... *should not be made final* if it includes a rejection... of any claim amended to include limitations which *should reasonably have been expected to be claimed*." In the present case, Applicant submits that it should have been clear to Examiner that claim 1 would have been amended to more explicitly define that the two busbars would be at different potentials. This is the only embodiment disclosed in the specification, and, it is submitted, would have implicitly been read into the original claim by one skilled in the art.

On this basis, Applicant respectfully submits that making the present Office Action Final is not appropriate in the circumstances. Examiner is therefore respectfully requested to remove the finality of the action.

Turning to the substantive rejections, applicant must respectfully disagree with Examiner's conclusions as to the motivation to combine the various references.

To begin with, Examiner has proposed that it would be obvious to modify Newman with reference to Shepherd. Applicant disagrees strongly with this contention. Examiner has suggested that a prima facie motivation is to "to gain the benefit of supplying power to a circuit board". With respect, this is not a "motivation", since power is already adequately supplied to the printhead chips in Newman. Applicant submits that Examiner should provide a motivation related to the specific differences between the power supply already provided in Newman and that of Shepherd. On the basis that no such motivation is provided, Applicant submits that Examiner has not fulfilled the requirements of MPEP 2143.01 ("Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art").

Examiner has also suggested that Shepherd uses busbars to reduce noise, and that such noise reduction is a reasonable motivation for using busbars in general. However, Shepherd is concerned with providing a busbar setup to a relatively large, high power computer circuit board, in which noise reduction is important. Examiner suggests that noise reduction is always a motivation in circuit design. However, Examiner has not even asserted (let alone considered) that the power requirements of Newman are entirely different to those of Shepherd. Specifically, Shepherd is intended for supplying power to a backplane of a computer. Clearly the sorts of voltage, current and noise requirements for a computer are entirely different (of the order of amps) compared to printheads, which typically require current of the order of milliamps.

Also of critical importance is that Shepherd is concerned with supplying power to a single logical voltage point on the circuit board. An elongate conductive spring or brush is used to supply power from the busbar in a more or less continuous fashion to a single power supply point along the edge of the circuit board. In contrast, Newman requires that a large number of individual power supply points for different chips be connected to the power supply. The setup disclosed in Shepherd, with conductive coils or brushes, would utterly not be suitable for modifying Newman.

Morerever, the even if one was to take Shepherd simply for the purposes of disclosing two busbars at different potentials, Examiner has not explained how one could successfully apply them to the arrangement shown in Newman. How would the chips in Newman interface with busbars if provided? Applicant submits that designing such a system is not a trivial exercise. In Newman, the chips are held in place with wire bonding. In a busbar setup, however, some form of connection needs to be formed and maintained between the chip voltage supply points and the busbars. Using wire coils or brushes is clearly unsuitable, but Examiner has not suggested any other way in which the requisite connections could be made between the printhead chips and busbars. Applicant submits that nothing in Shepherd or Newman suggests a way that this could be achieved.

For these reasons, it is submitted that Shepherd is not a suitable reference to be combined with Newman, and that in any event, any combination of the two utterly fails to disclose the present invention as claimed.

Turning to Examiner's comments in relation to the claims, Examiner suggests that Applicant's comments about the appropriateness of Newman et al as a reference are misdirected. Applicant disagrees. Examiner states that column 2 of Newman suggests that inkjet printhead requirements are similar to LED requirements. This is not correct. Newman merely suggests that a *particular* disclosure of an inkjet printhead is *more* analogous to an LED arrangement. However, utterly nothing is said about power distribution requirements, contrary to Examiner's comments. All that is discussed in that paragraph is the application of TAB technology to printhead manufacture. Examiner has used this to suggest that LED and and inkjet printheads requirements are analogous, but this is utterly unsupported by the disclosure. Indeed, the single piece of inkjet prior art that is mentioned is done so dismissively, on the basis that it is fundamentally different in manufacture from the LED printheads of Newman. Applicant submits that Examiner's comments are incorrect on this point and should be withdrawn. Applicant again submits that Examiner has established precisely no link between LED and inkjet printheads as being analogous art.

Examiner's comments about the noble metal strips are simply incorrect. Examiner suggests that Applicant's comments about noble metal strips are not relevant, because when the printhead is connected to the TAB frame, there is disclosed a power distribution arrangement where the use of busbars would be obvious. Applicant cannot understand how Examiner believes it would be obvious to use noble strips that happen to be present during a manufacturing step as a basis for modifying the end product. Applicant argues that to be so used, the reference must at least show that the noble strips are capable of being used *as they exist in the manufacturing step* for the claimed purpose. The strips in Figs 3 and 4 of Newman are remnants of a coating used to generate the wires on the TAB surface. They are not in any way disposed in such a way that they could ever be used for interfacing with a power supply busbar, let alone two power supply busbars of different potential. Using these strips to interface with busbars would require a substantial redesign of the entire chip assembly, as well as changing the mode of operation of the disclosure (including the fact that the noble strips referred to are NEVER used, whether in testing or before or after disconnection of each assembly from the TAB frame). It should also be noted that the noble film in Newman is on the top of the TAB film. Examiner is requested to explain how such a strip would interface with busbars without the busbars interfering with the other signal wires that are at the same level as them (by definition, since the strips referred to by Examiner are merely remnants of the production process for those wire connections).

For all these reasons, it is submitted that the feature of noble metal strips is not disclosed in any suitable way in Newman, and that this rejection should therefore be withdrawn.

Turning to the Examiner's comments in relation to Meyer, Examiner is asked to explain how a double-sided TAB would make the printhead cheaper. Producing double-sided TAB film is more expensive than single sided film. Twice the number of depositions and removals must be performed. Moreover, through holes add significantly to the cost of production. Examiner's argument is therefore incorrect and should be withdrawn or another motivation provided. Applicant reiterates that motivation for the use of double sided TAB film is not cost in the present invention. If Examiner wishes to maintain this rejection, Applicant requests that an applicable motivation for using double sided film, with all its additional costs and complexity, be provided in the context of the references.

Regarding claims 147 and 148, Applicant submits that Examiner is being deliberately obtuse. Examiner suggested earlier in the office action that different types of printheads have different power distribution requirements. One skilled in the art would well be aware of these requirements, which might be voltage ranges, current supply, noise immunity, bandwidth and so on. With respect, Applicant submits that it is disingenuous of Examiner to now suggest that "how a printhead is formed and used does not relate to the power distribution arrangement used to drive it. Examiner is therefore respectfully requested to either explain this discrepancy in reasoning or withdraw this rejection.

Similar comments apply to 150 and 154. Moreover, claims 150 and 154, whilst adding limitations to the ink supply feature, also add limitations to the power supply arrangement. They are also dependent upon claim 149, which defines the relationship between the ink supply and the power supply. Applicant is unsure why Examiner is still maintaining this rejection, since it does not appear to recognize the power supply limitation they explicitly include, but respectfully requests that Examiner withdraw it in view of these comments.

Applicant submits that the claims are in an allowable state for the reasons set out above. The lack of specific commentary in relation to any dependent claim is not an admission that Examiner's opinion in relation to that claim is accepted by Applicant. Rather, Applicant is attempting to focus on the most relevant issues that remain.

CONCLUSION

It is respectfully submitted that all of the Examiner's objections have been successfully traversed. Accordingly, it is submitted that the application is now in condition for allowance. Reconsideration and allowance of the application are courteously solicited.

Very respectfully,

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